

NEW OR NOTEWORTHY FUNGI.—PART V.

BY W. B. GROVE, M.A.

(PLATES 542, 543.)

THIS Notice of New or Noteworthy Fungi is a continuation of Part iv, which appeared in the *Journal of Botany* in January and February, 1912. I have to thank Dr. J. W. Ellis, of Liverpool, for kindly sending me several new species which he has met with, as also specimens of others which have not hitherto been found in this country. The Birmingham Natural History Society has kindly made a grant, from the Endowment of Research Fund, towards defraying the cost of the plates illustrating this paper.

213. *Sordaria coronifera* sp. n.

Peritheciis oblongo-conicis, plus minus immersis, $\frac{1}{2}$ –1 mm. altis, atris, rugulosis, sæpius ostiolo majusculo nitido conico instructis, tandem glabro apice umbilicatis, at sub apice pilis 5–15 atris acutis curvulis divergentibus, ex hyphis fasciculatis compositis, coronatis. Ascis clavatis, ca. $200 \times 40 \mu$ (part. sporifer.); sporidiis ellipticis v. subamygdaloideis, albidis, dein fuscis, denique opacis, atris, parte super. distichis, $32\text{--}40 \times 18\text{--}23 \mu$, primo caudis duabus hyalinis curvulis (inferiore longiore) præditis, appendiculo superiore tandem parvo hemisphærico, inferiore curvulo cylindrico, ca. $15\text{--}20 \times 4 \mu$. (Tab. 542, fig. 2.)

Hab. in stercore equino, Earlswood, prope Birmingham, Oct.

The appendages of the perithecia are as much as 350μ long, and point in all possible directions; they are composed of many fasciculated hyphæ, but taper to an acute point. The texture of the perithecium is soft, translucent-brown. This species is very similar to the varieties *coronata* and *aloides* of *S. curvula* De By. (Sacc. Syll. i, 234), but the appendages are more elaborate; it is, in fact, a further advance on them in complexity.

214. *DIAPORTHE STICTOSTOMA* Sacc. Syll. ii, Addenda p. xlviii.

D. punctostoma Ellis in Amer. Nat. 1883, p. 316.

Stroma elevated, tubercular, $\frac{1}{2}$ – $\frac{3}{4}$ mm. diam., formed from the unchanged cortex, each enclosing 3–8 circinating perithecia, which are monostichous and just pierce the dark-olivaceous disc by the round ostiole. Asci clavate-cylindrical, obtuse and bifoveolate at the apex, $55\text{--}60 \times 8\text{--}9 \mu$ (part. sporif.). Spores biseriate, except above and below, oblong-ellipsoid, often somewhat attenuated at one end, hyaline, 1-septate, 3–4-guttulate, faintly constricted, $12\text{--}14 \times 4\text{--}4\frac{1}{2} \mu$. (Tab. 542, fig. 3.)

On twigs of Apple, originally prepared for grafting, Bristol, October, 1915 (comm. A. D. Cotton). The stromata occurred mainly at the base of the twigs and were accompanied on the other parts by a large quantity of the pycnidial stage, *Cytospora stictostoma* Grove (see no. 227) and also by a curious minute staurosporous Hyphomycete whose position could not be traced.

215. *LEPTOSPHERIA FUEKELII* Niessl in Voss, *Zwei neue Ascom.* p. 1. Sacc. Syll. ii, 71.

Perithecia single or a few arranged in a line, in the latter case erumpent by a fissure, subglobose, black, with a short ostiole; texture angular-parenchymatous, olivaceous-fuscous. Asci subclavate-cylindrical, rounded above, very shortly pedicellate, about $110 \times 11 \mu$, surrounded by numerous, filiform, plainly articulate paraphyses, 3μ wide and a little longer than the asci. Sporidia distichous, cylindrical or slightly tapering downwards, straight or more often slightly curved, 5-septate, yellowish, the fourth loculus from the apex protuberant, $28-32 \times 4\frac{1}{2}-5\frac{1}{2} \mu$. (Tab. 542, fig. 1.)

On the lower part of old culms of *Phalaris arundinacea variegata*, in a garden, Burecot, near Bromsgrove (Ws.), May. The perithecia were found especially near the nodes. The last-formed septum of the spore is the second from the top; it is this which gives the peculiar character to the species. Accompanying the *Leptosphaeria* was a *Phoma*.

216. *LEPTOSPHERIA* (*POCOSPHERIA*) *PELLITA* Sacc. Syll. ii, 41. Var. *CIRSICOLA* v. nov.

Peritheciis gregariis v. seriatis, primo epidermide ostiolo papillato perforata velatis, dein epidermide corticeque excussis denudatis, depresso-sphaericis, atris, undique ostiolo excepto pilis copiosis rigidis radiantibus septatis olivaceo-nigricantibus obsessis, pilis sursum pallidioribus, $200-300 \times 3 \mu$. Ascis clavatis, breviter crasseque pedicellatis, $80-100 \times 10-14 \mu$, paraphysibus copiosis hyalinis filiformibus, ca. 1μ cr., pluriguttulatis obvallatis; sporidiis tristichis, fusoides, flavidis, 8-10-septatis, $45-56 \times 3-4 \mu$, loculis uni- v. bi-guttulatis, loculo tertio v. quarto inflato.

Hab. in caulibus emortuis *Cirsii arvensis*, Glenariff Hiberniæ, vere, 1911.

The whole perithecium reminds one somewhat of a dry closed *Vermicularia*, about $\frac{1}{2}$ mm. broad. There can be little doubt that this variety belongs to the species figured by Currey (*Simple Sphaeria*, fig. 129); the spores are exactly the same except that they are a little longer. They are so closely clustered together in the ascus that, until they are extruded, one might almost think that they were those of *Ophiobolus acuminatus*, which the perithecia resemble as well until the epidermis is removed. There appears then a likeness to *O. Cirsii*, which is also beset with filaments at its base, but the spores are very different in shape and only half as long.

217. *PHOMA RUBIGINOSA* Brun. in Act. Soc. Linn. Bordeaux, 1898, p. 10 extr. Sacc. Syll. xiv, 873.

Pycnidia minute, black, scarcely erumpent, black within. Spores oblong, biguttulate, $5 \times 2 \mu$.

On dry fruits of *Rosa rubiginosa*, France.

Var. *CIRCUMSTIPATA* var. n.

Pycnidiis dimorphis, 1-3 majoribus ($\frac{1}{8}-\frac{1}{5}$ mm. diam.) gregibus minorum circumstipatis, atris, collo brevi per rimulam longi-

tudinallem erumpentibus. Sporulis oblongo-ovoideis, $6-10 \times 2-3 \mu$, plerumque eguttulatis.

Hab. in aculeis *Rosæ caninæ*, Lapworth (Wk.), Maio; pycnidiorum greges maculas parvas cinerascens efformant.

This variety is remarkable for having in the centre of the groups 1-3 larger pycnidia closely surrounded by a number of smaller ones; all have similar spores. It is connected with the type (which has not yet been found in Britain) by the variety *major* Syd. (Sacc. Syll. xvi, 860). The latter has scattered or gregarious pycnidia erumpent by a fissure, and oblong spores without guttules, $6-10 \times 3 \mu$; it occurred in Germany on dry fruits of *Rosa inodora*.

218. PHOMA LAVANDULÆ Gabot. in Nuov. Giorn. Bot. Ital. 1905, p. 69. Sacc. Syll. xviii, 258.

Pycnidia on the stems, solitary, lens-shaped, somewhat prominent, black. Spores oval or fusoid, 2-guttulate, $4 \times 2 \mu$; sporophores acicular, hyaline, 12-14 μ long.

On stems of Lavender, Kew Gardens, August. The plants were attacked while still alive, but looking weakly. The fungus agreed exactly with the description except that the pycnidia were very numerous and crowded; they were 150-200 μ diam., pierced by a round pore; texture thin, parenchymatous. The fungus is probably a wound parasite; the whole bed at Kew was being gradually destroyed.

219. PHOMA LIRELLIFORMIS Sacc. Syll. iii, 87.

Pycnidia densely gregarious, arranged parallel to one another, linear-oblong, $\frac{1}{2}-\frac{3}{4} \times \frac{1}{8}$ mm., immersed, then erumpent by a fissure. Spores ovoid-oblong, straight, 2-guttulate, $7 \times 3-3\frac{1}{2} \mu$; sporophores not seen.

On branches of *Rhamnus*. The type not yet found in Britain.

Var. AUCUBICOLA Brun. in Act. Soc. Linn. Bord. 1888, p. 15 extr. Sacc. Syll. xiv, 871.

Spores elongate-oblong, straight or curvulous, biguttulate, $8-12 \times 3-3\frac{1}{2} \mu$. (Tab. 542, fig. 4.)

On dead branches of *Aucuba japonica*, Botanic Gardens, Birmingham, March. In these specimens the parallel cracks in the epidermis are strongly marked; they are mostly transverse and, while often as in the type, may reach at times a length of 3 mm. without any increase in width. The spores are intermediate in form between the type and the variety. The sporophores are subulate, $10 \times 2 \mu$. With the *Phoma*-spores were mixed a small quantity of elongate, linear spores, $15-20 \times \frac{3}{4} \mu$, borne on similar sporophores: these spores seem to become hooked, when freed from the sporophore.

220. PHOMA (PHOMOPSIS) ARCTII Sacc. Syll. iii, 122.

This fungus is already known as British, but the published accounts do not seem to be quite correct. It occurs on dead stems of *Arctium* of the preceding year, in company with *Diaporthe Arctii* Nits. The spores, which are lanceolate-oblong, biguttulate, $7-9 \times 2\frac{1}{2}-3 \mu$, are as near as no matter like those

described by Saccardo, but there is no true pycnidium. There is merely a blackened layer of altered epidermis, lying above the proligerous stratum on which the *Phoma*-like spores are produced. This can be traced, on other parts of the same stem, into a stroma which covers a rather dense sclerotoid mass of colourless cells, and finally into the ordinary perithecia-bearing stroma of the *Diaporthe*. The so-called *Phoma* is in fact hardly distinguishable from a *Leptothyrium*. Among the spores were seen a small number of the peculiar uncinatate sporophores which are considered a distinguishing mark of the subgenus *Phomopsis*. These looked exactly like the "walking-stick" spores of some species of *Phlyctæna*. (Tab. 542, fig. 5.)

In view of the disputed question whether these really are sporophores or another kind of spore, a careful investigation was made of the hymenium of this species. The proligerous stratum is composed of a mass of small olivaceous cells; the erect colourless cells which constitute the hymenium vary greatly in shape and size, but can be arranged in a gradual series, beginning with those which are merely oblong, passing on to ampulliform cells with a flask-shaped base and an acute apex, then into longer lanceolate cells on the apex of which a young spore is borne; these finally become acicular, and in that stage the spore has usually been cast off. No filiform or hooked structures were seen *in situ*, only loose among the spore-mass, but since these agreed in size with the acicular sporophores and some of them still had one end slightly thicker than the other, the conclusion seemed to be inevitable that they constituted the final stage in the development of the sporophores, but that they did not assume the uncinatate-filiform appearance until they had been cast loose from the hymenium, after losing their spores. Nevertheless, filiform spores (which became hooked when free) were seen *in situ* in *Phoma lirelliformis* (see preceding species), which is probably also a *Phomopsis*.

221. *PHOMA STRIÆFORMIS* var. *HYSTERIOLA* Sacc. Syll. iii, 132.

Pycnidia immersed, erumpent by a slit in an hysterioid manner, forming linear black streaks parallel to the striæ of the stem. Spores lanceolate-oblong, acute at one end, $6-8 \times 2\frac{1}{2}-3 \mu$, biguttulate; sporophores long, acicular.

On stem of *Cherophyllum temulum*, Storeton, Cheshire (J. W. Ellis), March. The specimens which I attribute, somewhat doubtfully, to this variety have exactly the appearance of a *Phomopsis* such as that just described; there is no true pycnidium, but merely the altered epidermis, and the spores are borne on sporophores longer than themselves, as in that species.

222. *PHOMA IRIDINA* Maire & Sacc. Syll. xvi, 1154.

Pycnidia scattered, oblong or lanceolate, immersed, at length erumpent, convex, black, up to $\frac{1}{4}$ mm. long, surrounded at the base by a few brown hyphæ; texture parenchymatous, dark-brown. Spores oblong-fusoid, subacute at both ends, especially below, $7-9 \times 2-2\frac{1}{2} \mu$.

On dead bleached flower-stalks of *Iris Pseudacorus*, Quarry Pool, Hamstead (St.), April. In the sixteenth volume of the Sylloge, this is recorded on dead bleached stems of *Iris foetidissima* in Corsica, and is placed as a subspecies of *Phoma Agapanthi* Sacc. (Syll. iii, 158), from which it differs merely in the narrower spores. The Corsican specimens are described as much larger ($\frac{1}{2}$ – $\frac{3}{4}$ mm. long), but the Staffordshire specimens seem to be identical with them in all other respects.

223. *SPHÆRONEMA CORNUTUM* Pr. Fung. Hoyersw. no. 144, Sacc. Syll. iii, 195.

Pycnidia gregarious, nearly superficial, black, 120–200 μ diam., growing on wood, subglobose, covered, especially in the lower part, with scattered black hairs; neck very long, cylindrical, quite straight or slightly flexuose, divided into fibrils at the apex; contents whitish, oozing out and forming a globule at the mouth. Spores oblong-ovoid, $3\text{--}4 \times 2 \mu$, mostly immature and immersed in a thick jelly. (Tab. 542, fig. 10.)

On dead wood, Sutton Coldfield, 1885. This fungus appeared again in 1915, on soft decaying wood (? willow), Windmill Naps, Tanworth, January–May, being first seen on a piece of wood, kept in a moist chamber, on which *Panus stypticus* was being grown, but afterwards found on other pieces of rotting wood, brought from the same locality by Dr. Bayliss-Elliott. It seems to be characterised by the erect brown-black flocci which are dispersed over the surface of the pycnidium and the adjoining wood, and by its very long slender cylindrical beak, which was at least 1 mm. long and $25\text{--}30 \mu$ wide at the middle. Preuss described the spores as “guttulis repletis” (ex Sacc.); this was not observed, but they had a habit, when expelled in water under the microscope, of collecting together in rounded masses of 6–12, looking almost as if enclosed in an ascus.

224. *Fusicoccum Aceris* sp. n.

Stromatibus sparsis, depresso-conicis, peridermio innatis, dein rima v. ore irregulari emergentibus, atro-cinereis, $\frac{1}{2}$ mm. latis, intus pallido-succineis. Sporis copiosissimis, fusoideis, fere rectis, apicibus subacutis, achrois, $12\text{--}14 \times 2\text{--}2\frac{1}{2} \mu$, primo continuis, dein septo mediano spurio (?) præditis v. saltem plasmate bipartito, sporophoris simplicibus, linearibus, sporam subæquantibus, $1\frac{1}{4} \mu$ latis suffultis. (Tab. 542, fig. 8.)

Hab. in ramulis *Aceris* sp., Cheshire (J. W. Ellis), April. It should be compared with *F. Carpini* Sacc. (Syll. iii, 250).

225. *FUSICOCUM GLÆOSPOROIDES* Sacc. & Roum. (Syll. iii, 249).

Stromata depressed-conical, scattered, immersed in the cortex, then crumpled by a roundish pore, blackish without, wavy and pallid or greyish within, with 1–several loculi. Spores oblong-fusoid, rounded above, rather acute below, continuous, straight, hyaline, $8\text{--}10 \times 2\text{--}2\frac{1}{4} \mu$; sporophores lanceolate, 2μ wide, rather longer than the spore. (Tab. 542, fig. 7.)

On twigs of *Corylus Avellana*, Cheshire (J. W. Ellis), April. This does not seem to be the same as *F. album* Sacc. (Syll. xi, 507),

= *Nemaspora alba* Pr., which also occurs, in Germany, on *Corylus*. Saccardo's record of *F. glæosporoides* is on *Betula* (?) in the Ardennes.

226. *FUSICOCCUM QUERICINUM* Sacc. Syll. iii, 248.

Stromata oblong-conical, some transversely placed, inflating the periderm, which at length splits and exposes a pale *Cytospora*-like disc; contents pale rosy-ochre, without the slightest tinge of black or olivaceous, surrounded (under the bark, as is seen when it is stripped off) by a whitish zone. Spores very numerous, cylindric-fusiform, acute at both ends, very slightly curved, colourless, $13-16 \times 2\frac{1}{2}-3 \mu$; the protoplasm is sometimes bipartite in the middle, at other times biguttulate. (Tab. 542, fig. 6.)

On twigs of Oak, near Malvern (J. W. Ellis), May. Supposed to be the pycnidia of *Diaporthe leiphemia*. Cf. *Cryptosporium conicum* Bon. (Sacc. Syll. iii. 741), which seems to be very similar.

227. *Cytospora stictostoma* sp. n.

Stromatibus dense in ramulis gregariis, peridermio innatis, $\frac{1}{4}-\frac{1}{3}$ mm. diam., pustulatis, protuberantibus, e basi rotundata conicis, pseudocellatis, contextu subceraceo atro-cinereo, disco truncato emergente albido-furfuraceo, vulgo poro atro unico centrali perforato. Sporulis oblongis v. subovoides, $7-9 \times 2-2\frac{1}{2} \mu$, e fronte visis præsertim basi subacutatis, vulgo biguttulatis, e latere curvulis et obtusatis, sporophoris stipatis subulatis ad 15μ long. suffultis.

Hab. in ramulis *Pyri mali*, Bristol, socia *Diaporthe stictostoma* Sacc. (see no. 214). The spores of this species are very unusual for a *Cytospora*; the difference between the face and profile views is considerable.

228. *Ceuthospora Euonymi* sp. n.

Stromatibus amphigenis, dimorphis, (1) unilocularibus, (2) plurilocularibus: (1) Minoribus, ca. $\frac{1}{4}$ mm. diam., aggregatis v. subsparsis, globulosis, prominulis, atris, ore conico-truncato epidermidis laciniis cincto dehiscentibus; disco furfuraceo rufo-fusco v. dilute rubescente, quinetiam rubro. (2) Majoribus tardioribus, sparsis, applanatis, orbicularibus, discoideis, $\frac{1}{2}-\frac{3}{4}$ mm. diam., atris, nitidulis, diu solidis sterilibusque, denique poris conico-truncatis 1-3 (rarius 4) dehiscentibus; disco tandem sporis copiose expulsis obliterato. Sporulis homomorphis, cylindricis, rectissimis, utrinque obtusatis v. basi subattenuatis, perfecte hyalinis eguttulatisque, $14-17 \times 2-2\frac{1}{2} \mu$, sporophoris rectis, tenuibus, subæquilongis suffultis. (Tab. 543, fig. 1.)

Hab. in foliis ramulisque *Euonymi japonici*. Wallasey, Cheshire, September-December (Miss B. O'Loughlin, comm. J. W. Ellis). Southampton, March (J. F. Rayner, comm. A. D. Cotton).

The two forms of conceptacles stand to each other exactly in the same relation as *Cytospora Laurocerasi* Fekl. to *Ceuthospora Lauri* Grev., which should equally be regarded as one species. The larger conceptacles resemble perfectly those of *Ceuthospora phacidioides* Grev. but are distinguished by the usually more

slender spores. *Cytospora foliicola* Lib., which may occur on the very same leaves, is distinguished from the smaller conceptacles not only by its (pallid) disc, but also by its smaller curved (sausage-shaped) spores. Its var. *Kalmiæ* Sacc., however, is not very different from *C. Euonymi*, and should be placed as a variety of the latter.

229. CEUTHOSPORA LAUROCERASI comb. nov. *Ceuthospora Lauri* Grev. Scot. Cr. Flor. pl. 254 (1827). Sacc. Syll. iii, 279.

Cytospora Laurocerasi Fekl. Enum. Fung. Nass. no. 437 (1860). Sacc. Syll. iii, 276.

On dead leaves of *Prunus Laurocerasus*. Common everywhere. Var. *ramulicola* Vize, Fung. Brit. no. 104, on dead shoots of the foregoing summer, = *Cytospora Laurocerasi* var. *ramulorum* Sacc., is equally common.

It is necessary, in consequence of the widespread impression, bred of Greville's mistake and Saccardo's statement in Syll. iii, 279, that Greville's *Ceuthospora Lauri* grew on *Laurus nobilis*, to point out that in Britain "the Common Laurel" meant (and still means) *P. Laurocerasus*. So far as I know, no *Ceuthospora* on *Laurus* has ever been found in Britain, certainly not by Greville, as his figure clearly shows in spite of his words. The genetic connection of the two above-mentioned forms, heretofore placed in distinct genera, becomes obvious when a comparison is made with *C. Euonymi* (no. 228), quite apart from the fact that little distinction exists between the two except in mere size, and that in this respect it is quite easy to obtain a complete gradual series between the small and the large conceptacles. In such a case it is clearly justifiable to choose the more accurate specific name, and drop the prior misleading one, for a false name, given in error, should not be allowed to carry any rights of priority. The hard dense stromata of the large conceptacles probably act as resting stages, being more or less of a sclerotoid nature, in both this species and *C. Euonymi*.

230. *Ascochyta Vincæ* sp. n.

Maculis amplis, irregularibus, fuscis, atro-brunneo-marginatis. Pycnidii epiphyllis, paucis, centro maculæ congestis, atris, punctiformibus, leviter prominulis. Sporulis anguste fusoides, rectis v. curvulis, basi magis quam apice attenuatis, interdum subinæquilateralibus, tenuiter 1-septatis, non constrictis, $11-14 \times 2 \mu$.

Hab. in foliis *Vincæ majoris*, Ledbury, Martio.

231. DIPLODINA PASSERINII Allesch. vi, 678. *Ascochyta decipiens* Passer. in Atti Accad. Linc. (Roma), Rendic. 1891, vii, 49 (non Trail). Sacc. Syll. x, 300.

Spots none. Pycnidia densely gregarious, extending for some distance, depressed-globose, about 200μ diam., subepidermal, pustular, fuscous-honey-coloured, pierced by a pore; texture thin, plectenchymatous, yellowish-brown. Spores cylindrical, rounded at both ends, not constricted, $7-12 \times 2\frac{1}{2}-3 \mu$, oozing out in the form of a yellowish globule.

On base of stems of *Antirrhinum*, Birmingham, May. The oily contents of the cells of the spore assume different appearances according to age, and may even look, at first sight, as if there were more than one septum.

232. SEPTORIA OXYSPORA Penz. & Sacc. Fung. Mortol. pl. 4, fig. 13. Sacc. Syll. iii, 565; Fung. Ital. pl. 1487.

Var. CULMORUM var. nov.

Pycnidiis confertis, plerumque in series secus fibras culmi digestis, tectis, minutis, depresso-sphæricis, atris, ca. 150 μ diam.; ostiolo epidermidem laceratam vix perforante; contextu parenchymatico, atro-olivaceo. Sporulis fusoideis, a fronte visis ferme rectis, a latere lunatis v. arcuatis v. flexuosis, deorsum acutioribus, granulosi, guttulis paucis irregularibus præditis, 13–19 \times 3 μ ; sporophoris vix conspicuis. (Tab. 542, fig. 9.)

Hab. in culmis *Dactylidis glomeratæ*, Burcot, prope Broms-grove (Ws.), Maio, sociis *Leptosphaeria microscopica* atque peritheciis quibusdam *Physalosporam* simulantibus (an *Leptosphaeria* eadem junior?). The pycnidia are seated on a sparse creeping dark-olive articulated mycelium. Distinguished from the type chiefly by its smaller and narrower spores, its habitat, and the absence of the spots. The spores frequently have the exact shape of a boomerang.

233. DIPLODIA SACCARDIANA Speg. Mich. ii, 270. Var. ANGLICA var. n.

Pycnidiis gregariis, majusculis, globosis, prominentibus, $\frac{1}{4}$ – $\frac{1}{2}$ mm. diam., epidermide pustulata dein lacerata tectis, bullatis, atris, poro parvulo rotundo impresso pertusis; contextu solidiusculo, subparenchymatico, obscuro-olivaceo. Sporulis valde ludentibus, diutissime achrois, nubilosis, oleoso-farctis, ovoideis, subinde biguttulatis, 13–16 \times 6–7 μ , sporophoris crassiusculis, rectis, hyalinis, 1 μ cr., sporis duplo longioribus suffultis, deinde brunneo-olivaceis, obovatis v. fusoideis v. clavulatis, quandoque inæquilateralibus v. curvulis, utrinque obtusiusculis, denique prope medium uni-septatis, interdum bi-septatis, leniter constrictis, 17–20 (usque 24) \times 5–6 μ . (Tab. 543, fig. 2.)

Hab. in ramulis emortuis *Sarothamni scoparii*, Caughley, Salop. Maio (leg. J. W. Ellis).

There can be little doubt that this is a form of *D. Saccardiana* Speg. (*Sphaeropsis* Sacc. Syll. iii, 292). It differs from that species in its larger pycnidia, which are not arranged in lines, in the larger and at length septate spores, and the total absence of the described "striæ." If it is a variety, then Spegazzini's species must be a *Diplodia*, not a *Sphaeropsis*. Many pycnidia were examined that showed none but colourless spores, reminding one of a *Macrophoma*, but a faint suspicion of colour in some of the spores induced further investigation, until at last in a few of the largest pycnidia the mature spores were discovered. The septa are variable; usually there is one septum in the middle, but occasionally it is nearer to one end, and in a few cases there were two

equidistant septa. In a similar way to this *Phoma Pinastri* Lév. = *Sphæropsis Ellisii* Sacc. is really a *Diplodia* = *D. Pinastri* Grove.

(To be concluded.)

LATE GLACIAL PLANTS OF THE LEA VALLEY.

By CLEMENT REID, F.R.S.

[THE *Quarterly Journal of the Geological Society* (lxxi, pt. 2, pp. 155-161, 1916) contains a paper by Mr. Clement Reid on "The Plants of the Late Glacial Deposits of the Lea Valley," Middlesex, which was read before the Society by the author on February 23rd last. It contains matter of such exceptional interest in connection with the early history of our flora that we have obtained permission from the Society to reprint the greater part of it in these pages. A plate accompanying the paper (in Q. J. G. S.) represents the material on which *Silene cœlata* and *Linum præcursor* are based.—ED. JOURN. BOT.]

Since Mr. Hazzledine Warren's paper was published in 1912* much work has been done in the pits at Ponder's End and Angel Road. Two other pits in the same district have also been investigated,† these being situated at Hedge Lane and Temple Mills. Thanks to the efforts of Mr. Warren, Mr. A. Wrigley, and Mr. E. T. Newton, a large amount of botanical material has been collected, and the flowering plants have been sent to me for examination. The additions thus made to the list are so numerous that we have now obtained one of the most interesting Arctic floras yet discovered in these low latitudes.‡ Several of the species until the present time have been unrecognised in the fossil state, and two seem to be new to science. In these circumstances it seems advisable to place on record the new finds, especially as some of them may be of zonal value.§ . . .

To how great an extent the peculiarities of this extinct Arctic flora of the Lea Valley are due to exceptional conditions of soil is not clear. It may prove that the presence of certain plants unknown elsewhere is assignable to the occurrence of an area of bare chalk in the higher stretches of the Lea Valley; nearly all the other British deposits yielding Arctic plants lie in catchment-basins of Boulder Clay, or of hard non-calcareous rock.

* Q. J. G. S. vol. lxxviii, pp. 213-51.

† Proc. Geol. Assoc. vol. xxv (1914), pp. 285-87.

‡ For the original list, see F. J. Lewis, in Warren, Q. J. G. S. vol. lxxviii (1912), p. 229.

§ Specimens of all the species have been sent to the British Museum (Natural History), and of most to the Museum of Practical Geology also.